BOOTHROYD STUART MERIDIAN

Bob Stuart answers Questions on Meridian's 568 and 562V.2

Overview…?

1 What is the Meridian 568 Surround Processor?

The 568 is Meridian's *latest and most advanced* 500 Series Surround Processor! It is a great performer and includes features that will ensure access to state-of-the-art audio performance for many years to come.

2 Why should I consider a 568?

It has an unbeatable pedigree and outstanding performance.

Meridian was the first company to make an all-digital surround processor when it introduced the 565 in 1994 and it rapidly became and remained the benchmark processor. The superior technology, design approach and sound quality provided by 565 was widely acknowledged and it received an amazing total of 25 industry awards including 'Home Theatre Decoder of the Year' by Home Entertainment in both 1995 and 1996, the prestigious EISA award for 'Home Theatre Decoder of the Year'. Not least, it holds a Stereophile Class 'A' rating.

The proprietary DSP software we developed for 565 has been continuously extended and refined and is used in our other world-beating DSP surround controllers: the Reference 861 and the hugely popular 561. The AAA-rated Meridian 861 Reference Surround Controller is our flagship surround controller and it is the standard to which all aspire.

The 568 has the benefit of many of the techniques and features pioneered in Meridian 861 and, like all our products, has been built with the future very much in mind. With 568's pedigree and 562V.2's flexible and transparent handling of audio and video formats, the new combination represents a tour de force – a very elegant solution.

3 You refer to Surround Controllers and Surround Processors. What's the difference?

In our terminology a Controller is a Processor that also controls all the audio (and video) inputs, provides a tape copying system – and maybe 2 or 3-room functionality.

568 is a Processor. It has quite a few inputs and may be all you need. But if you want more inputs, a tape loop, video switching or 2-Room+ you should use it with its partner – the new Meridian 562V.2 Multimedia Controller.

4 Quickly list for me some of the key features of 568.

- 24-bit 96kHz DACs and 96kHz Audio Processing
- High resolution upsampling to 88.2kHz or 96kHz 24-bit
- FIFO memory-based dejittering system (previously only available in the 800 Series)
- Eight analogue outputs *plus* balanced outputs for the front three channels
- Eight digital outputs for connecting to Meridian's astonishing DSP speakers
- Meridian High Resolution (MHR) output to Meridian DSP speakers
- Flash Memory for easy software updates and PC set-up
- Expansion port for DVD-Audio interface upgrade
- Two analogue and four digital and one optical inputs
- Receives MHR on digital inputs
- Composite or S-Video pass through for OSD (on-screen display)

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5 Does Meridian make other Surround products?

Yes, the 568 joins a distinguished family that includes 561 and the extremely flexible 861 Reference Surround Controller.

6 I've heard a lot about Meridian Digital Theatre. What is it?

Meridian Digital Theatre is a system built using Meridian DSP Loudspeakers and one of our Digital Surround products like 568, 561 or 861. It also includes source products like 508, 504 or the 800 Reference DVD Player.

The huge advantages offered by a Meridian Digital Theatre include incredible transparency, musicality and solidity in the sound that results from keeping the signal in digital form all the way from the disc to the loudspeaker.

A Meridian Digital Theatre is designed and built with our fanatical attention to detail: as a result you get sound that cannot be equalled and it operates beautifully as a whole.

Meridian is still the only company to make all the components necessary to build such advanced home theatre or music surround systems.

Sound issues...?

7 What is DSP?

DSP is Digital Signal Processing. 568 does all its magic in the digital domain. So digital signals from sources like CD, DVD, DSS and DTV remain in digital form and this maximises their quality potential.

Most other products use DSP chips that have built-in processing algorithms optimised for mass-market applications. Frankly, we cannot be satisfied with this approach.

Meridian sets very high standards of performance and has been unique in fitting very powerful general-purpose audio computers, and *only* using decoding and other algorithms developed uniquely in house.

As an example of where we differ, off the shelf DSP solutions in other products will operate with between 16 and 24-bit precision. In the 568 we will often use 48 or occasionally 72 bits to guarantee transparency.

This approach has always been applied to our Surround Controllers, Processors and DSP Loudspeakers. Consequently the sonic performance is outstanding and the flexibility that allows the user to get the best from each installation is unparalleled.

Because we are independent in generating the DSP code, our customers can always obtain upgrades from us to keep up with the latest sources.

In the 568 we use four powerful audio computers to decode the incoming signal, to create the many different sound fields, to render the audio exactly for the speaker layout and positions you have chosen. It is also used to protect those speakers against overload and not least to de-jitter, to upscale and to enhance resolution. A very powerful overall approach that keeps our customers happy and our competitors worried!

8 What exactly is Upsampling?

Upsampling uses a complex DSP filter to double the rate of samples from the source so that the subsequent system components can more accurately reproduce the sound. 568 combines Resolution Enhancement with upsampling. For example, CD (which starts as 44.1kHz 16-bit audio) is upsampled using our proprietary DSP to 88.2kHz 24-bit and DVDs with 48kHz audio are upsampled to 96kHz 24-bit.

Meridian is famous for its Resolution Enhancement technology in products like 518 and 618 where it is used to make the finest CD releases.

The upsampling and Resolution Enhancement can be applied to any 44.1kHz or 48kHz signal fed into 568.

9 How powerful is the DSP computer in 568?

The 568 provides 180MIPs in 4 separate powerful DSP chips. You will only find more processing in the Reference 861.

Three of these processors are on plug-in cards so, over the years, if necessary, we can economically increase the processing power and even add a fifth processor to this engine.

10 What does the DSP do in 568?

The Meridian 568 is a powerful 8-channel music computer with complete analogue and digital conversion capability. The on-board DSP contributes to the outstanding sound quality through a proprietary FIFO memory-based dejittering process. DSP is also used for upsampling, downsampling and resolution enhancement.

DSP is used to create and optimise the sound. 568 has sixteen different programmes (we call them Presets) that are used in different circumstances. The Presets in 568 fall into three categories: Logic, Music and Discrete (5.1 and 7.1 formats).

DSP is also used to upscale material (for example from 2 to 6 channels, or to add sides). It also provides sophisticated bass management, a LipSync™ function to trim delay in cinema dialogue, setup calibration tones, and a number of other features.

11 Can you say more about Logic modes?

The 568 provides four DSP options specifically designed for reproducing stereo film soundtracks. Three of these Presets **ProLogic**, **THX Cinema**, and **TV Logic** are designed for Dolby Surround encoded material. Most films, and increasingly studio and TV features are encoded using Dolby Surround.

The 568 Digital Surround Processor follows the Meridian philosophy of performing the entire signal processing digitally, and the Dolby Surround decoding operates purely in a digital mode with 24-bit precision. It was natural that when Meridian turned their attention to ProLogic and THX, the only way they could satisfy their exacting standards for clarity, transparency and function was to develop the whole thing from scratch using only the best hardware and software DSP techniques.

The **ProLogic** system uses psychoacoustically optimised directional enhancement to increase the separation in both left–right and front–back directions. It does this by continuously calculating the position and degree of the currently dominant sound. This sound is then steered to that position in the image. This technique is very successful for cinema and other dramatic material.

The **THX Cinema** DSP Preset provides ProLogic decoding followed by the additional THX Ultra signal processing refinements developed by Lucasfilm Ltd.

The THX extensions to ProLogic decoding are designed to provide a better match between the sound of the movie theatre and a home cinema in the following ways:

- The front channels are re-equalised to correct for the higher treble often found in film soundtracks.
- The surround channels are frequency-corrected using a timbre-matching process so that sounds moving front–back are more convincing.

- The surround channels are decorrelated to break up any artificial localization of the rear signals due to the speakers being nearby. In the 568 Digital Surround Processor our proprietary decorrelation algorithm is optimised to give a spacious surround sound that has no artifacts disturbing to music or other sensitive sounds in the mix.
- The time synchronization between loudspeakers is adjusted to compensate for the fact that the speakers in a home system tend to be a lot closer to the listener than in a movie theatre.

TV Logic is a logic Preset, with user-adjustable steering, that can give higher intelligibility and a more appropriate spatial presentation for studio-based TV material.

The remaining Logic Preset, **Mono**, is designed for films with mono soundtracks. The Mono Preset also offers the option of an **Academy** filter to correct the bright sound prevalent in early mono films.

568 allows you to select a particular speaker layout when using Logic modes. (See Q. 23.)

12 What are Stereo Surrounds?

ProLogic is a surround-decoding algorithm that uses a steering method to localize a sound in the front stage and also to locate sounds behind the listener. It works very well. However, in ProLogic there is only one surround signal – the surround signal is mono even if it is played over two speakers. This is the main reason that THX Cinema uses a decorrelation technique to prevent the surrounds appearing to be directly behind the listener when 'envelopment' is required.

The ProLogic Preset in 568 has proprietary extensions that allow the steering to include the surrounds. So, whilst you can select a standard Mono surround signal, the DSP in 568 is capable of steering surround sounds individually through all 7 horizontal speaker locations. There is a menu that lets you choose 'Steered All'.

'Stereo Surrounds' has been a feature of Meridian Surround Processors for a number of years and this playback can be hugely more involving on movies and exciting on music. In many ways this goes beyond the effects being introduced in EX – but only operates on PCM or analogue inputs for now. (See Q. 16.)

13 Music is really important to me. How does 568 deal with music?

Music is the most important source for us too: our first interest in surround was to improve music playback.

'Stereo' was not invented as a 2-channel process. The inventors of stereo all advocated at least three loudspeakers. For many years we lived with a severe compromise: – 2-channel stereo dictated by the inability of the LP to deliver more than two channels.

Before the DSP era it was very difficult to make significant returns to real – i.e. 'solid' stereo. That has now changed. Meridian has pioneered its now-famous music-processing modes like **Music** and **Trifield** out of a sincere belief (and repeated demonstration) that music – even when it is distributed on a 2-channel disc like CD – quite simply sounds more lifelike and involving if played back on a great surround system using (of course) the right processing.

Once you understand that there need be no definite connection between the number of channels coming in and the number of speakers used to render the sound field you will begin to understand what we are doing. Needless to say our very highest standards of both psychoacoustic and DSP design are used for music.

If for no other reason, get a surround system based on 568 (or 561 or 861) to give you a whole new level of enjoyment of music.

The 568 is also one of the very few surround products to offer **Ambisonic** UHJ decoding. This 3-D music format is very satisfying – although discs are a bit rare. We hope that will change now that MLP can deliver real B-format Ambisonics.

The 568 has **SuperStereo** and also offers **Music Logic** – a 'steered' mode that is fun on some non-acoustic material.

For those for whom 'pure stereo' still means 2-speaker, then of course 568 offers **Direct** and **Stereo** (and **Mono** for extremists).

568 allows you to select a particular speaker layout when using Music modes. (See Q. 23.)

14 What about discrete 5.1 and 7.1?

Today discrete multichannel comes in compressed as **Dolby Digital** or **MPEG** or **DTS** or **MLP**.

Meridian's discrete decoders, using custom DSP code are the most powerful on the market and pass all the most extreme bitstream tests for all these formats. The discrete decoders in 568 can provide up to 24-bit data (depending on the system).

The 568 exploits all the options of the discrete formats: e.g. in Dolby Digital we support all types of *Dialog Normalisation* and *Dynamic-range control* with features like compression to assist late-night viewing.

568 allows you to select a particular speaker layout when using 5.1 modes. (See Q. 23.)

15 How does THX fit in?

Lucasfilm's THX Cinema has a lot to offer on both Logic and Discrete sources of movie soundtracks. If you are interested to build a THX system then 568 has all the signal processing in place to comply with THX Ultra requirements for ProLogic, Dolby Digital, DTS and MPEG.

16 What about EX?

Lucasfilm's EX is a proposed extension to movie sound that adds a centre rear channel (which can be played back either through a discrete speaker or as a phantom image between two rear speakers).

The Stereo Surrounds option in the 568 ProLogic and THX Cinema modes already provides fully steered surrounds (see Q. 12).

Extending 568 to decode EX is exactly the kind of thing you might expect to see in a future software upgrade (see Q. 78). We aren't promising this until we see a number of titles, but if the format succeeds we will certainly support it.

17 What is a Preset in 568?

As I described in Questions 11, 13 and 14 the 568 has a large number of DSP programmes that we call Presets.

Each Preset comes with an interesting number of menu items that allow you to adjust many features of the playback. You can usually trim bass, tilt, balance, as well as centre level and delay, surround level and bandwidth. In some Presets you can also adjust decoding parameters like steering, seating position, dynamic-range control and so on.

In 568 you can build your own Presets based on the built-in ones. If you have worked out a combination of menu settings that you want to keep you can store it as a new Preset, with a name you choose. You can also attach it as a default to a Source (like CD, DVD, TV etc.).

In fact each Source has a total of five attachments – each telling the 568 which Preset to use when the incoming format is PCM, Dolby Digital, MPEG, DTS or MLP.

18 OK, so what do you mean by Source?

There are 12 Sources selectable by the 568's **Source** button and by the 12 Source keys on the MSR (Meridian System Remote): CD, Radio, LP, TV, Tape1, Tape2, CDR, Cable, DVD, VCR1, VCR2 and LD. In Meridian systems the process of selecting a Source can also be made to control many operating parameters.

19 What do you mean then by Phantom Source?

When you select a Source in a Meridian system, the 568 will look up its settings that you have stored either through front-panel or computer configuration (see Q. 70). Each Source is user-configured to one physical input (analogue or optical) on the back panel and the 568 will select that input and attempt to detect and lock onto the incoming format.

Now, although each Source attaches to one physical input it does not mean that other Sources cannot use the same input. There is no reason why the 568 shouldn't use the same input (e.g. D1) for all the system Sources.[1] This would mean that when you press CD you would get the same signal as when you press DVD.

Why would you do that? Well the reason is that each Source selection also causes 568 to load a Preset. You may want to connect a DVD player to the D1 input and use the Trifield Preset when playing a CD but the ProLogic Preset for a DVD. By making Trifield the default for Source 'CD' and ProLogic the default for 'DVD' you now have a rapid way to change *all* the settings of the 568. The method applies system-wide so in this example the 562V.2 could be set up to turn the video off when CD is selected.

We call this process *Source Phantoming* -- the creation of phantom sources because it appears you have more than one player.

Phantom is one kind of abstraction that the 568 setup uses to make the system really easy to use on a day-to-day basis, Layout is the other – this is discussed in Q. 23.

20 What is Bass Management?

Bass Management refers to a number of signal-processing operations that are used in 568 to optimise the low frequencies in the final sound.

In many systems, and for formats like PCM or Logic, this involves using precision DSP crossovers and combiners to move the bass from speakers that have less capability and into speakers that can really deliver the frequencies and levels.

In 568 you can choose to use subwoofers only in certain circumstances (like Music, Logic, 5.1) and to have different crossover frequencies applied in each case. (See Q. 23.)

The discrete 5.1 movie formats like Dolby Digital can deliver much more low frequency bass than any of the Logic or Music formats. In fact, the 5.1 signals have the potential to require a 16-fold increase in bass power handling in a system.

Although the Dolby's Digital, MPEG and DTS studio encoders limit the total bass level to around +15dB, the resulting bass energy can still be incredibly demanding for even the very biggest systems and, equally important, may be disastrous for other, less capable, speakers.

[1] In fact this is exactly how it can be configured when all signals come via a 562.

The Meridian 568 incorporates a very sophisticated series of bass protection schemes for Digital Surround formats. The user can control the overall amount of LFE added in. Also 568 has a bass limiting function to control the *total* amount of bass passed to the system.

As well as the overall bass protection, the 568 can simultaneously monitor *all eight* speaker outputs. If the signal demands more bass than a speaker can supply, a proprietary, psycho-acoustically optimised limiting filter momentarily and elegantly reduces the load on that speaker. This unique protection method means you can get the most out of all the speakers in the room without any fear of damage or unpleasant overload noises.

21 Why would I want to delay my speakers?

If you are thinking of getting Meridian speakers you shouldn't delay!

But seriously, the 568 has individually adjustable digital delays for each output and these are used to optimise the sound.

When you calibrate the system (see Q. 71) one of the options allows you to tell the processor how far away each speaker is from the listening position. 568 will then use its delay lines to make sure that the sound arrives at the same instant from all the speakers. This level of sophistication adds immensely to the image realism and involvement you get in sound fields. It also ensures that the sounds from all the speakers add up in just the right way.

22 What is LipSync™?

LipSync™ is a proprietary Meridian feature that allows you to get the best synchronisation between picture and sound in your system by allowing you to adjust the delay between the sound and the video image by up to one video frame.

We are quite sensitive to time differences between the picture and sound.[2] On movies it is disturbing if there is an obvious time difference between speech or sound effects and the picture. It is almost always the case that storage or broadcast systems delay the picture more than the sound and so the LipSync control in 568 allows you to delay all the sound coming out of 568 by up to one video frame (1/30 second or 30ms) to re-align it.

Most movies are mixed for a viewing distance of 30 feet, and when viewed from 12 feet or less the sound arrives too early, having a disconcerting effect. Using the LipSync control you can add an overall delay to the sound to accommodate your closer home viewing distance. Sound travels about 1 foot in each millisecond, so 568 allows you to adjust the distance in six-inch (0.5ms) increments.

Many TV broadcasts delay the picture by half a video frame, and can benefit from a LipSync setting of 12ms.

In the PC setup for 568 (see Q. 70) you can also set a Frame Sync parameter. This is useful if you have an advanced video processing system, e.g. a line doubler, digital video processor or interpolating device that delays the video significantly. For each Source you can set an additional overall audio delay of up to 7 video frames (210ms), which is more than enough to accommodate the most sophisticated combination of video processors and display devices.

[2] Of course, not every actor in a movie is great at getting the voice-over right. In movie production all the dialogue is 're-spoken' and added in a sound post-production phase long after the scenes are shot.

System design …?

23 You talk about Layouts. What do you mean?

We are referring to speaker layouts.

Like all Meridian Surround Processors, the 568 gives you incredible flexibility in choosing a speaker arrangement. 568 has eight outputs and they can be configured to drive Left, Centre, Right, 1, 2 or 4 surround speakers located at sides and rears and up to three subwoofers.

An important aspect in a system is bass management. You may decide to fit some speakers that are larger (i.e. more bass handling capacity) than others. It isn't uncommon for a centre or surround speaker to be smaller than the main left and right speakers. That sort of information can be fed into the 568 and it will make the optimum use of the bass capacity of all the speakers and, at the same time, protect small speakers from overload.

Some people do not want to use subwoofers for music – in fact you may have main speakers that can handle all the bass (hence low-frequency spatial information) for both Music and Logic applications and want to listen to these formats in this way: perhaps only adding in subwoofer reinforcement for 5.1 movie formats. With other surround controllers this would be a nightmare of reconfiguring every time you listened to something new.

With 568 this kind of flexibility is built right in. Better still it is automatic and attains the highest audio quality ideals for every combination of Source, Preset and Format.

When you configure the 568 you have the option to use a centre speaker and subwoofers differently for movies, for music and for Logic and discrete formats.

This customisation even extends to choosing different subwoofer crossover frequencies for Music, Logic and 5.1. This unique and particularly powerful feature allows very fine tuning of a system that includes subwoofers with often startling benefits for Music.

Once set up, you can forget about it because the 568 will make the Layout changes automatically.

24 Do I need Meridian DSP speakers with 568?

Everyone needs Meridian DSP speakers!

However, the 568 can be used with all types of speakers. It can accommodate conventional passive speakers used with external power amplifier(s), active speakers and of course DSP speakers. Not only that, but these speakers can be used in almost any sensible combination and the 568 can be configured to work with your existing equipment. Of course it blends intelligently with other Meridian products for ultimate performance and flexibility.

25 Do I need a centre channel?

We think so – and it should be a good one.

If you are lucky enough to be able to install a centre speaker that accurately matches the tonality of the main speakers then the improvement that a centre speaker will bring to music will astonish you. Guaranteed!

For movies, a centre speaker to handle dialog is quite important.

Don't skimp on the centre speaker – sometimes systems are displayed with small, easy-to-install centres – but the centre takes a lot of load on movies and will affect the whole image integrity for music.

26 Do I need subwoofers?

Now this is a more difficult question. The answer depends some on the size of the room. For small to medium-sized rooms my feeling is 'there is no subwoofer like no subwoofer'. But I have a very particular perspective, which is that I want total integrity between high, medium and low frequencies for music – not just in terms of response – but in spatiality. The spatial impression of an auditorium is conveyed in a large part by the low frequency ambience – which is directional.

So for music, undoubtedly the best prescription is to have all speakers capable of reproducing low frequencies and to eschew a subwoofer. Obviously not all circumstances allow this and unfortunately not everyone will use 5 or 7 Meridian DSP speakers.

Sometimes you may want to add in a subwoofer for Logic movies. Certainly even I will add in a subwoofer just to handle the LFE part of 5.1 movies (but keep it silent for any other material). 568 allows you to take such extreme purist positions – and of course if you like or want subs that isn't a problem – you can have up to three and use satellites everywhere.

What does the 568 play…?

27 What can 568 decode?

The 568 can decode all forms and data rates of Dolby Digital (AC-3), DTS, MPEG, MPEG Surround and Meridian Lossless Packing (MLP).

28 So I can feed 96/24 into my 568?

Yes. The digital inputs support 32kHz, 44.1kHz, 48kHz, 88.2kHz and 96kHz 24-bit. 568 also supports Meridian's MHR content protection on its inputs and outputs so that you can be assured of very high quality content.

29 What is MHR?

MHR (Meridian High Resolution) is a proprietary method for getting the highest possible sound quality in playback systems that use Meridian components like 568, 800, 861 and DSP Loudspeakers.

MHR also uses proprietary encryption and anti-copy techniques to ensure secure transfer of audio streams between elements of a Meridian-only system for the purpose of playback only. It provides a secure copyright protection environment and has the very important benefit of lowering jitter and improving sound quality on all material.

30 And does 96/24 come out of my 568?

Yes if you want it to. The 568 will use the highest rate possible on its outputs and high-rate (88.2kHz or 96kHz) is available on both the analogue and digital outputs (according to your setup).

31 Can I play CDs through 568?

Of course! Nearly all CD players provide an SPDIF 44.1kHz 16-bit digital signal that can be fed straight into 568. It can upsample CDs to 88.2kHz 24-bit and the results are amazing (see Q. 8). The 568 has Trifield, Music, Ambisonic, Super Stereo and Music Logic Presets which are carefully optimised for rendering 2-channel music sources like CD in a surround system. Of course, if you want to listen to just 2 speakers we provide Direct and Stereo.

32 What about DVD-Video?

The 568 is excellent on DVD and all the audio formats are supported. Fit a digital connection between the DVD Player and the 568 and set up the player to provide un-decoded 5.1 material. The 568 will decode and optimise PCM, Dolby Digital, MPEG and DTS from DVD.

33 Can I play VCD or CVCD?

Yes. Depending on the player you may or may not get a digital feed of the MPEG stream. If you do, 568 will decode it, otherwise the decoded PCM can be used to play back the discs with Presets like ProLogic or Trifield.

34 Can I play SAD or DAD?

There are a lot of TLAs[3] around these days – but why would *anyone* call a format SAD? SAD (Super Audio Disc) and DAD (Digital Audio Disc) are marketing misnomers for DVD-Video discs that have 96kHz 2-channel audio streams.

The 568 plays these back and with Trifield you can add in a centre speaker for even better stereo.

35 Can I play DTS DVDs?

A very small number of DVDs have an optional DTS stream; if your DVD player can provide this signal the 568 will decode it just like Dolby Digital.

36 Can I play DTS CDs?

Yes. As long as you have a digital connection from the CD or DVD player the 568 will detect the DTS stream. Because the DTS CDs are not flagged it is useful to set the DTS delay parameter to help the decoder detect such discs smoothly.

37 Can I play MLP CDs?

Yes. As long as you have a digital connection from the CD or DVD player the 568 will detect these discs and decode the MLP stream. 568 will also respond to the flags in the MLP stream and ensure that the correct surround mode is selected. The Meridian 568 will additionally decode CDs that use MLP to carry Ambisonic B-format encodings.

38 Can I play Laserdisc?

You can feed the analogue or digital outputs of a Laserdisc player directly to 568 (or via 562V.2), which will allow you to play any Laserdisc – including those with mono, stereo, Dolby Surround or DTS sound tracks.

To get access to any Dolby Digital sound on Laserdisc you will also need a **Meridian 519 RF Demodulator**. Meridian's demodulator is the very best and you should hear what its additional de-jittering and the upsampling in 568 do to the sound of those discs you thought you knew.

39 Can I play LP?

568 doesn't have a phono input stage. However, you can fit an optional phono module to a 562V.2 and not only enjoy your LPs in stereo – you can upscale to surround with Presets like Trifield. The results will amaze you.

[3] TLA – Three-Letter Acronym!

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40 Can I play DVD-Audio?

Although the technical standard now exists for the DVD-Audio disc, important issues like copy protection and the connection interface are still being discussed, so there are no DVD-Audio players on the market yet. As one of the writers of the standard, Meridian is hard at work on this. 568 has been designed to flexibly adapt to future formats like DVD-Audio. (See also question 79).

41 How about MLP?

MLP (Meridian Lossless Packing) is a special lossless coding method that allows higher quality and more channels to be fitted onto discs. We are very proud that our coding system has been selected as the mandatory coding method for DVD-Audio.

568 has a full MLP decoder built in.

42 Will it decode HDCD?

No, but HDCDs are CD-compatible and play back fine without decoding.

43 What about DSS?

DSS can provide a digital output and you will experience a huge improvement in sound if you connect it directly to 568 (or via 562V.2). A nice surprise will be when you hear what an incredible difference upsampling makes to DSS music stations.

44 What about MP3?

Good question! For the time being we don't think 568 needs an MP3 decoder because there isn't yet an agreed interface for MP3 and it will always be decoded in the players. Connect the player to 568 and enjoy.

45 Can I play SACD?

Yes. SACD just has a two-channel analogue output, so you can connect it to 568 – or to 562V.2 along with your other analogue sources like VCR, TV, Radio etc. See Q. 78.

46 What is MPEG?

The 568 currently decodes all MPEG audio streams. MPEG shows up in a number of places – e.g. on PAL DVDs, on VCD and on some satellite and digital radio broadcasts.

47 I heard about 192kHz. Will 568 handle this?

Eventually. Some DVD-Audio discs will use 192kHz 2-channel coding. 568 has an expansion slot and at some point we will be making a multichannel input module and upgrade package that will allow high-rate multichannel (including 192kHz) to be fed into 568. See Q 52.

48 I've heard about something called DSD. Will that be OK too?

DSD is the coding system used on SACD (see Q 45). Until more aspects of SACD player design are revealed it is hard to answer this specifically other than to say that the 568 upgrade slot allows for almost any source format to be accommodated.

49 But my Speakers don't support 96kHz. What do I do?

No problem. There is more benefit from double speed digital audio the further down the chain it goes. If you cannot use 88.2kHz or 96kHz digital outputs don't worry. For now, use the incredibly transparent downsampling DSP in the 568. If you upgrade your DAC or DSP speaker then you can turn double speed on again at any time.

Video issues in 568…?

50 Does 568 have video processing?

No, the 568 simply passes video through for the purpose of adding On Screen Display (OSD).

51 What Video inputs are available?

568 has the capacity to pass through either composite or S video, but not at the same time. The signal paths are shared, so you decide when you install it whether to connect composite or S.

568 Connections…?

52 Can 568 take multichannel inputs?

The 568 receives multichannel signals now as up to 5.1 or 7.1 encoded with Dolby Digital, MPEG, DTS or MLP.

Discrete multichannel is an important consideration for the coming years as newer sources capable of outputting discrete (like PCM or MLP) on new digital interfaces start to enter the market.

At this point, connections are not defined for formats like DVD-Audio and the final solution may include Firewire or other protected interfaces.

568 has an expansion slot that we believe to be quite capable of supporting any of these future possibilities. So, at some point, we will be making a multichannel input module and upgrade package that will allow 568 to receive high-rate multichannel (including 192kHz). See also Q. 47.

53 What audio outputs are available?

The Meridian 568 has eight standard unbalanced analogue outputs for driving eight speakers. Three of these outputs (for Left, Centre & Right) are also available in balanced form on XLR.

In addition, the 568 has four SPDIF and/or MHR outputs that allow the connection of up to eight digital or DSP speakers.

Finally the 568 has a bypass digital output which allows the currently selected signal to be fed to another zone.

54 Has 568 got a headphone socket?

No, it makes little sense to connect headphones to a Surround Processor.

55 Will it handle Firewire?

See Q. 52.

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Bob Stuart answers Questions on Meridian's 568 and 562V.2

568 as a Controller…?

56 Can I use the 568 without 562V.2?

Yes, the standard 568 provides 5 digital inputs and two analogue inputs. This is often enough to put together a complete AV system. If you can manage with these inputs and do not need the video switching, tape loop or 2-room features of 562V.2 then the 568 is all you need.

57 Right now I have a Meridian 501, 502 – can I use these with 568?

Yes. If you have a 501 or 502 you can use these to gather all the analogue sources for the system and feed them to the 568. This will be fine as long as the 5 digital inputs on 568 are enough and you don't need the video switching 562V.2 provides.

58 Can 568 be the controller for a 2-Room system?

The 568 does not have any signal routing features to function as a 2-Room controller. However, like all Meridian controllers it supports multiroom displays and integrates into a Meridian 2-Room Plus system.

59 Can I record from my 568?

Not sensibly. If you want to do any taping we suggest you add a 562V.2.

568 with Digital and DSP speakers...?

60 Can I use 568 with Meridian DSP Loudspeakers?

Yes – and what a system! 568 along with a combination of DSP5000/C, DSP5500/C, DSP6000/C or DSP33/C builds a Meridian Digital Theatre (see Q. 6).

568 will work with any Meridian DSP speakers of whatever vintage. The new or upgraded versions of DSP speakers support 96kHz and MHR and that, of course sounds the very best.

61 Can I use 568 with Meridian Digital Subwoofers?

Yes, it works perfectly with Digital Subwoofers like D1500 and D2500.

62 What about older Meridian Digital speakers?

Meridian D600 speakers are more than ten years old. If you want to use them your dealer will fit an EPROM that allows them to work in the Meridian Digital Theatre.

562V.2 …?

63 What is the Meridian 562V.2 Multimedia Controller?

562V.2 is a control and switching centre for a digital audio system. Think of it as a preamp for digital systems. 562V.2 is a recent upgrade to the well established and hugely popular 562V.

562V.2 allows you to control 5 cable-digital, 2 optical and 7 analogue sources in an installation. 562V.2 has analogue and digital outputs (there are internal A/D and D/A converters) and it supports analogue, digital and VCR recorders with a separate copy loop.

A 2-Room plus system can also be built around a 562.

The 562V.2 also controls video sources with incredibly high standard studio-grade video routing and processing. Up to four S signals can be switched to a main output and independently to two videotape outputs. Up to six composite video sources can be controlled (also supporting a main and two tape outputs). New in 562V.2 is the processing that allows conversion of the main and tape S outputs to composite.

562V.2 has RS232 for control and setup – which is now possible using the Meridian setup application.

64 Can I use 562V.2 with a CD Recorder?

Yes, 562V.2 can be used to direct analogue or digital sources to a CD Recorder.

65 Can I use 562V.2 with DSP speakers?

Yes, in fact one of the uses for 562V.2 is to bring analogue sources together for a pair of Meridian DSP loudspeakers.

66 Can 562V.2 play LP?

Yes, you can fit an optional phono module and enjoy your LPs on the system.

568 with 562V.2…?

67 How many audio inputs do I get with this system?

You can connect 7 digital sources to 562V.2 and a further 5 to the 568, so all 12 sources (on the MSR) can be digital. In addition, you can connect 7 analogue sources to the 562V.2 and a 8th to the 568. I think the answer is 'plenty'!

68 Should I make both analogue and digital connections between 562V.2 and 568?

Yes, we recommend it. Obviously we want as many sources as possible to reach 568 in the original digital form. For analogue it is better to select those sources in 562V.2, but to do analogue to digital conversion in the 568. This reduces jitter on the analogue sources.

69 I have a Meridian 562/V. Does it need an upgrade to work with 568?

No it doesn't. Your 562/V will work just fine. However, may be interested in getting a software update for it so that you can configure the system using the Meridian Setup Application. (See Q. 72).

Configuration…?

70 Do I need to use a computer to set up a 568?

No, it isn't necessary, but it is usually easier.

568 comes with a number of built-in Types (factory-preset standard setup combinations – see Q. 74) which cover most speaker combinations.

For more advanced setup of the many audio options, computer setup provides a quick and easy way to complete the system setup. You can also review settings, store and print the setup and build User Types (see Q. 75).

The setup program runs in Windows™ 95, 98, 2000 or NT.

71 What about Calibration?

The first time the surround installation is put together it should be calibrated – and your Meridian dealer will be happy to do this for you. 568 has a number of sophisticated setup parameters and provides a series of special test signals and sine-sweep that allow you to get the best sound.

The Calibration routines allow you to adjust delays for speaker distances, to adjust phase, level and image integration.

Best of all, when the calibration is done you can load the settings back into your PC so you can keep a backup.

72 I really wish I could use a computer to set up a 562V.2.

Well now you can. Version 2 EPROM for the 562 family adds the ability to configure 562V.2 using the Meridian Setup Application on a Windows PC.

The 562V.2 does not have Flash memory, so software updates do require an EPROM change, but this kind of product typically has needed very few updates. This also means that the 562 will not store User Types (see Q. 75).

You can still configure the 562V.2 from the front panel, but most people will appreciate the superior interface of the computer and especially the ability to save and restore setups.

73 Can I upgrade my 562 or 562V?

Great news: a version 2.0 EPROM can be fitted to any existing 562 or 562V – inexpensively adding PC setup to products that are up to six years old.

The new video features in 562V.2 are not available as an upgrade.

74 What is a Type?

A 'Type' is the Meridian term for a complete suite of settings for a product. When a product is 'Typed', all the user-configurable settings are reset to one of a number of factory-preset Types. In 568, examples of Types may be 'all the settings for an analogue THX speaker system', etc.

75 What is a User Type?

Like other Flash-memory-based Meridian products, 568 supports User Types. A User Type is built in the PC setup application. For example when you have got the setup just right for your 568 you can save it as a User Type and give it a helpful name. This User Type can then be stored in the 568.

Why would you do that? In case someone overwrites a setting or makes an adjustment you don't like you can restore the whole item by restoring the User Type – even if you are nowhere near a PC. (You can also lock menu settings to prevent such accidental maladjustment).

You may want more than one User Type. For example, if you occasionally move the 568 between systems with different requirements, or if you have a few very different applications for 568 they can all be pre-programmed and stored in its flash memory using a PC. Then switching between applications takes less than a minute.

76 How is the software changed?

568's software can be updated using a computer with an RS232 connection. Updates will be posted from time to time on the Meridian web site at:

http://www.meridian-audio.com/lib_soft2.htm

77 Can I control it with AMX, Crestron or Phast?

Yes. The 568 has a full set of commands that allow it to be fully integrated into any control system that uses an RS232 bridge.

About upgrades…?

78 What is the upgrade path for 568?

None of us can know what the future will bring. So before looking forward I would like to explain our approach to upgrades by describing what we did for the 565, the 568's immediate predecessor and market leader for five years.

It is astonishing how rapidly things have changed over the lifetime of 565. For example, when this first true-digital surround processor was launched (with an architecture that would support upgrades) things like Dolby Digital, DTS, MPEG audio, MLP and DVD did not exist. Yet, not only were we able to offer a total of *6 major software upgrades* but two DSP processor upgrades that allowed the 565 not only to decode these formats, but actually to be the *first* and *best* processor on the market to offer decoding for each of these new formats.

In the 6 versions were innovations like Stereo Surrounds, variable crossovers, better calibration, adding side speakers to a theatre, LipSync™ … the list is very long.

These upgrades were available for all 565s ever made enabling our customers to follow changes in the marketplace and to continue to enjoy a world-class product.

This is a stunning record, unequalled by any other company.

So why do we want to introduce 568 and not keep upgrading 565? Not every upgrade that is desirable is economical. When 565 came out there was no hint that we would see sample rates running up to 96kHz. Even if there had been a hint there was no interface and certainly no DACs able to operate with state-of-the-art sound quality at either 96kHz or 24-bit. In the intervening time Laserdisc came and went as the dominant movie carrier. DVD was unheard of and now it is evolving at a breathtaking rate. Eventually DVD will bring discrete multichannel, complex connection interfaces and copy-protection systems that effectively mean we would, over time, have to replace nearly every component in a 565 to keep it current! That just isn't fair to 565 owners. An upgrade path should not involve buying the product twice over.

By contrast the Meridian 861 Reference Surround Controller has been designed using high-performance motherboards in such a way that *all* the circuitry is on plug-in cards. This means

everything can be upgraded, changed, evolved and so on. It is a great performer but it is in a very different price range.

The 568 takes as much from 861 as is practical and extends the 565 concept by adding a multichannel digital input expansion port and room for changing and adding to the DSP processors. We think we have made a state-of-the-art machine that should lead the field for at least five years and, like all Meridian products, it is designed to give wonderful sound for a lifetime.

One word of caution: technology never stands still. Meridian is likely to evolve 568 and associated products in sensible ways that improve the sound, picture or versatility. This does not mean that we *will* do *everything*, or that we will do it *first* – so you must be happy with what you buy today. However whatever we do will be excellent, for good reason and carefully thought out.

Ask your dealer for a copy of our white paper on upgrades, 'Bulletin on new technologies, product roadmaps and upgrades'.

79 Will the 568 be upgradable to DVD-Audio?

It's very likely. This is a very exciting time for Meridian and no other company is better placed to make the most of DVD-Audio when eventually this settles into a full specification. The 568s architecture is perfect for getting the best from discrete multichannel, as we ably demonstrate now with Dolby Digital, MPEG, DTS and MLP.

In Question 52 I explained about discrete multichannel inputs (which DVD-Audio will need). There is a lot to be solved in the area of copy protection, so we won't make any outrageous promises. However, we hope to have convinced you that we have designed 568 for flexibility, with ingenuity. Watch this space…. We will update this answer as progress is made.

80 I know you don't want to make firm promises, but can you indicate the sort of things we might see in future 568 upgrades?

Obviously we are looking for a sensible way to integrate DVD-Audio and other high-performance audio formats into the Meridian Digital Theatre components. This has been uppermost in our minds as we designed 568.

I don't forsee a lot of changes in movie formats any time soon. Obviously there are niceties like EX, but the real expansion and upgrade for 568 may well be in areas of speaker interaction, speaker control and DSP for things like DVD-Audio or room correction.

More …?

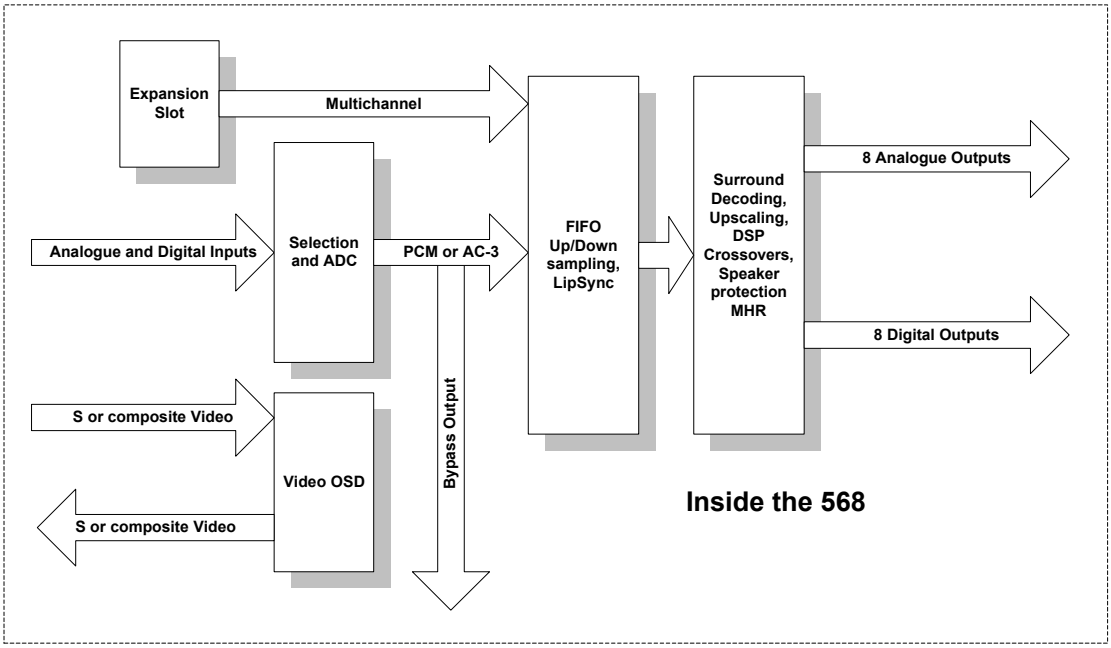
81 Where can I learn more about 568 and 562V.2?

You should talk to your Meridian dealer. You can also get more information from our website:

- An current version of this FAQ: http://www.meridian-audio.com/lib_faq.htm
- 568 and 562V.2 user manuals: http://www.meridian-audio.com/lib_hand.htm.
- 568 and 562V.2 PC setup application: http://www.meridian-audio.com/lib_soft2.htm

Inside 568 …?

82 What's inside a 568?



Sources

- The 568 can accept up to 7 sources. These can be digital (cable or optical) or analogue.
- MHR supported on inputs.

Outputs

- The Input selection is fed to the main processing and the bypass output.
- 568 will decode the input appropriately for the incoming format and onto the configured loudspeaker array. MHR and/or double-speed may be used on digital outputs.
- There are 8 analogue and 8 digital outputs.
- MHR supported on outputs.

Video

- There is a studio-grade video loop-through that adds OSD to either composite or S video signals (but not both together).

Expansion

- Expansion slot for future high-rate, multichannel and/or protected digital inputs.
- DSP processors on exchangeable cards.

Processing

- De-jittering
- High-precision proprietary DSP is used to upsample PCM (e.g. from 44.1kHz or 48kHz to 88.2kHz or 96kHz) with 24-bit precision if requested by the user.
- High-precision proprietary DSP is used to downsample PCM (like 96kHz to 48kHz) with 24-bit output precision for certain surround modes.
- Surround decoding (Dolby Digital, DTS, MPEG, MLP etc.)
- Format upscaling (Music, Trifield, ProLogic etc.)
- Speaker Layout management
- Speaker crossovers
- Bass management and protection
- Calibration sounds
- Differential and global audio delays

Phantom Sources

- The same physical input can be selected using more than one Source key to create a 'phantom source', so that 568 automatically loads a different combination of processing settings.

Hardware details

- Advanced PCB techniques. Extensive use of 4 and 6-layer PCBs.
- 10 re-programmable logic devices for flexible data handling and control.
- Expansion port for future digital input and output interfaces.
- Supports 5 DSP processors, 4 on plug-in cards.
- Flash memory for software updates.
- Very advanced analogue circuitry. Uses highest quality audiophile-grade components.
- Fan kit option for difficult built-in situations.